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[Claim(s)]

[Claim 1] The profile frame by which the profile frame which has a slot-like outline part equipped with a fixed projection or its both pushed out undercut **** on the windowpane, it was fabricated, and extrusion fabrication was carried out is the help of an injection-molding process. In at least one selected field, re-fabrication or after being completed or re-fabricated, are completed. It is the method of manufacturing a windowpane equipped with the profile frame which consists of a thermoplastic elastomer. The method characterized by the inner wall of a slot being partially supported at least by re-fabrication of a profile frame with the help of the injection-molding process in the selected field, completion, or the core that both has the section corresponding to the inner side outline of a slot in inside.

[Claim 2] The method according to claim 1 characterized by arranging a core in the inside of a slot of a profile frame before using an injection-molding process in the selected field, and removing a core from a slot again after removing from an injection mold.

[Claim 3] The method according to claim 2 characterized by using the core of the hard material which does not change by the temperature and pressure of a re-forming step.

[Claim 4] The method according to claim 3 characterized by using the core of the material a core is made to be fitted to the form of a slot.

[Claim 5] The method according to claim 1 characterized by using the injection mold which has the unified core and carrying out an injection generation process.

[Claim 6] The active position which the injection mold which has the unified core is used, and said core is designed as a partial core which supports the web of a slot-like outline part, and performs support, The method according to claim 5 characterized by the ability to be displaced to the pause position which makes easy introduction to the slot of the core itself, and removal from a slot.

[Claim 7] Use of a method given in any 1 clause of Claim 1 which re-fabricates the **** field between the start of an extrusion profile frame, and the end to 6.

[Claim 8] Use of a method given in any 1 clause of Claim 1 which completes a profile frame in the field of the

sharp corner of a windowpane to 6.

[Detailed Description of the Invention]
[0001]
[Field of the Invention] Undercut **** this invention A fixed projection (anchoring projection), Or the profile frame by which profile frame (profile frame) which has a slot-like outline part equipped with the both pushed out on the windowpane, was fabricated, and extrusion fabrication was carried out with the help of an injection-molding process It is related with the method of manufacturing a windowpane equipped with the profile frame which is completed in at least one selected field re-fabrication or after being completed or re-fabricated and which consists of a thermoplastic elastomer (elastomer).
[0002]
[Description of the Prior Art] The method of pushing out and fabricating the profile frame which has the slot-like outline part which consists of a thermoplastic elastomer and is equipped with a fixed projection is known for the Europe application EP 0620134ANo. 2. An injection nozzle is used before an assembly and an adhesives constituent is introduced into a slot equipped with a fixed projection. It is chosen as a profile frame and an adhesives constituent by the material which does not carry out adhesion combination mutually, and [therefore, the connection between a profile frame and the adhesion flange (flange) of a window frame] It is carried out by the mechanical interlock between a profile frame and the hardened adhesives constituent which is pasted up on the adhesion flange of a window frame. If needed, such window structure can remove a windowpane from a window frame comparatively easily, and has the advantage that it can newly insert in again. In this case, a required thing is only removing hardened adhesives bead (bead) from an adhesion flange, and filling up the slot of the profile frame on a windowpane with an adhesives constituent again.
[0003] When pushing out and fabricating a frame on a windowpane, you have to re-fabricate the **** field between profile Strand's (strand) start and finally extrusion fabrication was carried out. When profile Strand consists of a thermoplastic polymer, suitable compression molding can perform re-fabrication. However, re-fabrication of a **** field can also be performed with the help of an injection-molding process. This is always required, when there is too little material made to adhere to this position in an extrusion forming step in the field which should be re-fabricated, or when cutting off a part of frame profile after hardening and adding a profile frame after that in the field which should be re-fabricated.
[0004] It is always required to complete a profile frame according to an injection-molding process later, or to perform addition on a profile frame, also when a windowpane has one or more sharp corners. This is because it is desirable in the case of the windowpane which has a sharp corner to push out and fabricate profile Strand of a frame profile covering the course of the shape of a curve in the field of the sharp corner of a windowpane, and to keep a straight line corner field released. This is because it is very difficult for one to

push out the profile frame which has the right outline section, and to form in a sharp corner by fabrication. Moreover, similarly, filling up an adhesives constituent with later into the slot of a corner field is accompanied by difficulty, when the slot is making the right angle or the acute angle in the field. In this case, in introducing an adhesives constituent into a slot using a robot, a special difficulty occurs. Therefore, in the field of a corner sharp for the above-mentioned Reason, profile Strand adheres covering a curve-like course, and a straight line corner field remains released.

[0005] Completing a straight line corner field is known by carrying out injection molding of the polymer which pushes out and fabricates a profile frame to a curve-like corner field as mentioned above, and is equipped with the system of reaction from the Europe application EP 0524060ANo. 1 in the case of the windowpane which has a sharp corner. However, it has the profile frame which consists of a thermoplastic polymer, and, in the case of the windowpane which has the slot which receives adhesives, applying this method learned from the Europe application EP 0524060ANo. 1 is accompanied by remarkable difficulty. This is because the frame in a straight line corner field is completed by the same thermoplastic polymer as constituting the profile frame when a profile frame consists of a thermoplastic polymer. This means that the corner field of a windowpane is surrounded with the injection mold with which the polymer which should be ejected later is introduced by a temperature higher than the melting point and the high pressure of a profile frame. It has become clear under such conditions that an adjoining slot-like outline part changes. Since this modification is remarkable, a slot contracts sharply, it is completely closed depending on the case, therefore it becomes impossible to already introduce an adhesives constituent into a slot. Also when performing re-fabrication with the help of an injection-molding process in other positions of a profile frame, for example, the **** field between profile Strand's start, and the end, the same problem occurs.

[0006]

[Problem to be solved by the invention] This invention is based on the purpose of developing the method described at the beginning that re-fabrication of an extrusion profile frame, completion, or its both are performed without destroying an extrusion profile.

[0007]

[Means for solving problem] According to this invention, this technical problem is attained by supporting the inner wall of a slot partially at least with re-fabrication of the profile frame by the injection-molding process in the selected field, completion, or the core (core) that both has that section corresponding to the inner side outline of a slot in inside.

[0008] Before mechanical support of the inner wall of a slot arranges a windowpane for example, in an injection mold or arranges an injection mold on a windowpane, it can be performed by arranging the core of the form corresponding to the field covered with the injection mold of the slot of a profile frame. After this core removes an injection mold, it is removed from a slot.

[0009] The core by which form attachment was carried out so that it might correspond to the section of a slot can also be directly arranged on the up mold of an injection mold. Although the material of the profile frame carried out elastic deformation, therefore the core has geared with the profile when removing an up mold, an

up mold can be removed from a windowpane with a core, without spoiling a profile as a result. On the other hand, it is not necessarily filled up with the whole cavity of a slot, and a core is designed to only support the web (web) of a profile frame. And after carrying out a re-forming step, it is also possible to design a core to also remove [to be able to move so that you can make it displaced to the center of a slot, and] what problem from a profile frame nothing with an up mold.

[0010] A convenient improvement of this invention will become clear from Claims and the following explanation.

[0011] The desirable example of application of the method of depending on this invention is an example of application which pushes out and fabricates a profile frame on the windowpane which has a sharp corner. Therefore, by the following explanation, it has an extrusion profile frame and this invention is explained in relation to the illustration work example about manufacture of the windowpane which has at least one sharp corner.

[0012]

[Mode for carrying out the invention] The corner field of the windowpane 1 which has the sharp corner 2 and the corner whose angle is 90 degrees in this case is expressed to drawing 1 . although a certain kind of automatic train window glass is designed to have such a sharp corner -- the curve of the bigger or, small radius in the case of others than this -- boundary attachment ****. In many cases, in the case of the side window attached eternally, the windowpane of such a form can be seen. In many cases, the windowpane which has two sharp corners is used for the rear window of a car. In this case, generally two bottom corners are designed as a sharp corner, and two top corners are rounded by the small range bigger. In other cases, the windowpane of the rectangle all the four corners are especially right-angled in a construction section is used. In all these cases, this invention can be used.

[0013] First, on the whole, it roasts and frame-like covering (covering)3 of an opaque material of baked finish are given to the border area of the windowpane 1. It dissolves during the heat-treatment which a windowpane receives for a curve, strengthening, or its both, and this frame-like covering is printed on the surface of glass. Subsequently, the frame profile 4 is pushed out and fabricated on the border area of the windowpane 1 on this covering 3. If it sees with a sectional view, the frame profile 4 will be the slot-like outline part 5, and will be formed of a bottom 6, the inner side web 7, and the outside web 8. Webs 7 and 8 have a tooth 9 inside. A tooth 9 forms the fixed projection for adhesives constituents introduced into a slot 5. The profile frame 4 has lip (lip)10 which project further on the outside which extends outside across the boundary of a windowpane.

[0014] The profile frame which has the outline section of a figure cannot be formed with the sharp corner in a corner field by the known extrusion fabrication method. Therefore, it is necessary to make pushed-out profile Strand adhere to the corner on a windowpane in the form of the curve of a small radius bigger. [as a result, in the case of a radius the course of the shape of a curve of a lip 10 not only being formed in a corner field but small] It cannot push out in the lip part of a profile, and the polymer in Di (extrusion die) cannot be supplied appropriately, therefore, in many cases, the portion of a lip becomes shorter than a straight outline

part. For this reason, completing a lip 10 in a corner field according to a re-forming step is known. It is also because a lip can be seen from the outside of a windowpane that it is necessary to make it complete such. Injection molding of the corner 12 is carried out on the lip 10 in a straight line corner field by this re-forming step. When using the same thermoplastic elastomer for fabrication of the corner 12 about a profile 4, the portion in which the corner part 12 is attached to a lip 10 disappears mostly.

[0015] According to the work example of the re-fabrication method by this invention expressed to drawing 3 and drawing 4 , the core 14 corresponding to the section of a slot 5 in a section is arranged in the slot 5 of the profile frame in the field of a corner. A core must constitute a core 14 from temperature which reaches into a re-forming step with the material which does not carry out adhesion combination of also softening a frame profile or also making it dissolve with a frame profile so that it can remove easily from a slot again after a re-forming step. For example, constituting from metal can also constitute a core 14 from a hard polymer. However, the core 14 can also consist of polymers which have the advantage of being able to be adapted for each different radius of a frame profile and which carry out elastic deformation.

[0016] In order to carry out a re-forming step, the windowpane 1 including a corner field equipped with a core 14 is arranged in an injection mold equipped with the lower mold 16 and the up mold 20. These injection molds 16 and 20 are molds which have preferably the comparatively small surface area which is not so large compared with the surface area of the corner field which should be re-fabricated. As shown in drawing 4 , the lower mold 16 has the crevice where the corner 2 of a windowpane is pushed in. The mold portion 18 which remains above the crevice 17 forms the mold surface of the lip part which should be re-fabricated. The up mold 20 is designed similarly to correspond to the form of a request of a lip. The mold surface is designed in the upper part of a core 14 to carry out a termination on the surface of a core 14. The up mold 20 and the lower mold 16 are equipped with the suitable heating device 22. The up mold 20 has the gate opening 23, a gate opening is contacted, an injection nozzle is arranged, and a dissolution elastomer is filled up with the bottom of pressure by the injection nozzle.

[0017] In the case of the injection mold which expressed to drawing 5 , the lower mold 16 is constituted completely the same with having explained in relation to drawing 4 . On the other hand, the up mold 25 is equipped with the core 26 united with it. A core 26 is designed as a partial core in this case, and in order that the material pressure at the time of injection may mainly act on the outside web 8, it serves to only fix the form of this outside web 8. The actual core 26 forms the bottom end of the mold portion 27 which can be displaced in the direction of the Kakuji division-into-equal-parts line of a sharp corner. Displacement to the active position of this mold portion 27 is performed by obtaining the help of the eccentric machine (eccentric) 28 in the case of a figure. The eccentric vessel 28 can be rotated over 180 degrees with the help of suitable slewing mechanism (not shown). Advance to the end position of another side of the mold portion 27 is performed with the rotation to which the eccentric vessel 28 corresponds under an operation of the spring power of the spiral coil spring 29. In the end position of a figure, a core 26 contacts the outside web 8, serve to fix the form of the outside web 8 during re-fabrication, and to this [in the end position of another side] When dropping the up mold 25, what problem can also intrude a slot nothing, and when removing the up

mold 25, it can remove from a slot 5 again.

[Brief Description of the Drawings]
[Drawing 1] It is the figure showing the corner field of the windowpane containing a sharp corner and a profile frame after carrying out an extrusion forming step.
[Drawing 2] It is the figure showing the corner field expressed to drawing 1 after completing a lip by this invention.
[Drawing 3] It is the top view of the corner field of the windowpane by drawing 1 before completing a lip by re-fabrication by which the core was arranged in the inside of a slot of a profile frame.
[Drawing 4] It is the sectional view in alignment with line IV-IV of drawing 3 containing the loose core (loosecore) arranged by the profile into the re-forming step of an injection mold.
[Drawing 5] It is the sectional view of the injection mold which contains the core arranged by the up mold like the case of line IV-IV of drawing 3 .
[Explanations of letters or numerals]
1 Windowpane
2 Sharp Corner
3 Covering
4 Profile Frame
5 Slot-like Outline Part
6 Bottom
7, 8 Side web
9 Fixed Projection
10 Lip
12 Corner
14 Core
16 Lower Mold
20, 25 Up mold

[Drawing 1]

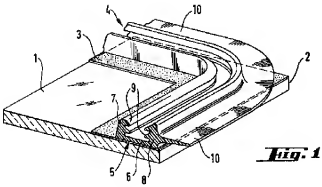

Fig. 1

[Drawing 2]

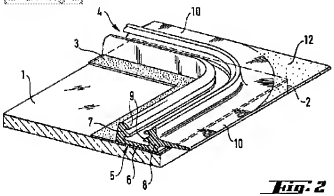

Fig. 2

[Drawing 3]

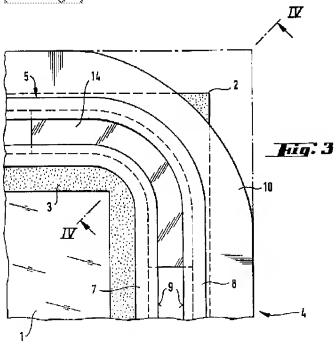

Fig. 3

[Drawing 4]

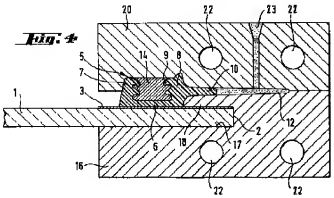

Fig. 4

[Drawing 5]

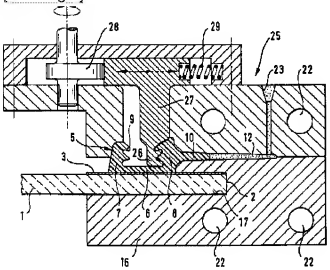

Fig. 5

[Translation done.]